

white along the basal portion of their outer webs; all the under surface scarlet, separated from the green of the chest by a semilunar mark of white; two middle tail-feathers golden green; the two next on each side golden green on their outer webs and black on their inner, the whole six tipped with black; the three outer feathers on each side black, crossed by numerous narrow bars of, and narrowly tipped with, white; thighs black; bill orange; irides red; feet dark grey.

Total length, 10 inches; bill, 1; wing, $5\frac{1}{2}$; tail, $5\frac{3}{4}$; tarsi, $\frac{1}{4}$.

Hab. Escuintla, South America.

Remark.—Nearly allied to *Trogon collaris*, Vieill.

CUCULUS OPTATUS. *Cuc. corpore superiore cæruleo-griseo; pogoniis internis primariarum fasciis latis albis ornatis; remigibus saturatè violaceo-brunneis; apicibus subalbidis, serie macularum oblongarum albarum alternatim ordinatè; corpore subtùs albo, fasciis nigris.*

The whole of the upper surface slaty grey; inner webs of the primaries broadly barred with white; tail-feathers dark violet-brown, with a row of oblong spots of white placed alternately on either side of the stem, and slightly tipped with white; the lateral feathers have also a row of white spots on the margin of their inner webs; chin and breast light grey; all the under surface buffy white, crossed by bands of black; irides, bill and feet orange.

Total length, 13 inches; bill, $1\frac{1}{4}$; wing, $7\frac{3}{4}$; tail, $6\frac{1}{2}$; tarsi, $\frac{3}{4}$.

Hab. Port Essington, Australia.

Remark.—Closely allied to the Common Cuckoo of Europe.

CUCULUS INSUPERATUS. *Cuc. capite, guld, et corpore superiore cæruleo-griseis; alis, dorsoque nitidè viridescens; caudè brunneo-viridi singulè plumè apice albo, et marginibus pogoniorum interiorum ordine macularum albarum triangularium ornatis; parte subscapulari tectricibus caudè inferioribus, crissoque rufis; corpore subtùs rufa-tincto-griseo.*

Head, throat and all the upper surface dark slate-grey; back and wings glossed with green; tail glossy brownish green, each feather tipped with white, and with a row of triangular-shaped white marks on the margins of the inner webs; primaries and secondaries with a patch of white on their inner webs near the base; edge of the shoulder white; under surface of the shoulder, vent and under tail-coverts rufous; the remainder of the under surface grey, washed with rufous; bill black; feet olive.

Total length, $9\frac{1}{4}$ inches; bill, 1; wing, $6\frac{1}{2}$; tail, 5; tarsi, $\frac{5}{8}$.

Hab. New South Wales.

Remark.—Nearly allied to *C. cineraceus* of Vigors and Horsfield.

CUCULUS DUMETORUM. *Cuc. capite, uropygio, colloque saturatè cæruleo-griseis; alis, caudè dorsoque metallicè brunneis; apicibus remigibus leviter albis; pogoniis interioribus serie macularum triangularium parvarum ornatis; pectore griseo, rufa-tincto.*

Head, neck and rump dark slate-grey; back, wings and tail bronzy brown; tail-feathers slightly tipped with white and with a row of

small triangular-shaped spots on the margins of their inner webs; breast grey, washed with rufous; under surface of the shoulder, flanks, vent and under tail-coverts deep rufous; irides brown,

Total length, $8\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, 5; tail, $4\frac{1}{2}$; tarsi, $\frac{1}{2}$.

Hab. Port Essington, Australia,

Remark.—Nearly allied to *Cuculus insperatus*.

SPHENŒACUS GRAMINEUS. *Sphen. vittâ supra oculos albâ; corpore supernè brunneo; mediâ plumarum saturatè brunneâ; subtùs griseo; lateribus crissoque cervinis; mediâ parte singulæ plumæ pectoris lineâ minimâ saturatè brunneâ ornatâ.*

Stripe over the eye white; all the upper surface brown, the centres of the feathers being dark brown; secondaries brownish black, margined with buff; tail pale reddish brown, with dark brown shafts; under surface grey, passing into buff on the flanks and vent; each feather of the breast with a very minute line of dark brown down the centre; bill and tarsi fleshy brown.

Total length, $5\frac{1}{4}$ inches; bill, $\frac{5}{8}$; wing, $2\frac{1}{4}$; tail, $2\frac{5}{8}$; tarsi, $\frac{3}{4}$.

Hab. Van Diemen's Land and the southern coast of Australia.

PACHYCEPHALA GLAUCURA. *Pach. capite, loris, spatio infra oculos, et latâ maculâ semilunari trans pectus saturatè nigris; gulâ, intra maculam nigram, albâ; nuchâ posteriore, lineâ angustâ apud latera pectoris pone semilunam nigram, et corpore inferiore flavis; caudâ griseâ; tectricibus caudæ inferioribus albis vel subflavis.*

Head, lores, space beneath the eye and a broad crescent-shaped mark from the latter across the breast deep black; throat within the black, white; back of the neck, a narrow line down each side of the chest, behind the black crescent, and the under surface yellow; back and wing-coverts yellowish olive; wings dark slate-colour, margined with grey; tail entirely grey; under tail-coverts white, or very slightly washed with yellow; irides reddish brown; bill black; feet dark brown.

Total length, 7 inches; bill, $\frac{5}{8}$; wing, 4; tail, $3\frac{5}{8}$; tarsi, 1.

Hab. Van Diemen's Land.

Nearly allied to *Pachycephala gutturalis*, but distinguished by a shorter bill and by the colouring of the tail, which is entirely grey.

CYSTICOLA CAMPESTRIS. *Cyst. capite ferrugineo-rubro, dorso tectricibusque alarum brunneo-griseis; singulis plumis corporis superioris fasciâ longitudinali saturatè brunneâ ornatâ; caudâ rufobrunneâ, plumis duabus mediis latâ maculâ nigrâ juxta apices; corpore subtùs pallidè cervino.*

Head rusty red; back and wing-coverts brownish grey, all the feathers of the upper surface with a broad stripe of dark brown down the centre; wings blackish brown, the primaries margined externally with rusty red, and the secondaries edged all round with brownish grey; tail reddish brown, all but the two centre feathers with a large spot of black near the tip; all the under surface pale buff.

Total length, $5\frac{3}{4}$ inches; bill, $\frac{5}{8}$; wing, $2\frac{3}{8}$; tail, $2\frac{3}{4}$; tarsi, $\frac{3}{4}$.

Hab. Australia.

Remark.—For the loan of this new species I am indebted to the kindness of H. E. Strickland, Esq.

CALAMOHERPE LONGIROSTRIS. *Cal. vittâ pallidâ, supra oculos cervinâ; corpore supernè rufo, subtùs saturatè cervino; mento albido.*

Faint line over the eye fawn-colour; all the upper surface reddish brown, becoming more rufous on the upper tail-coverts; primaries and tail dark brown, fringed with rufous; chin whitish; all the under surface deep fawn-colour; irides yellowish brown.

Total length, $6\frac{1}{2}$ inches; bill, $\frac{1\frac{5}{8}}$; wing, 3; tail, 3; tarsi, 1.

Hab. Western Australia.

MICROSCOPICAL SOCIETY.

June 18, 1845.—Thomas Bell, Esq., F.R.S., President, in the Chair.

A paper by George Shadbolt, jun., Esq., "On a British species of *Ixodes* found upon Cattle," was read.

The insects forming the subject of the present paper were found on some cows belonging to a farmer residing at Chingford, Essex, on the borders of Epping Forest. They are known to the country people by the name of the "Tick," but they are aware that they differ from the insects of that name which infest sheep and goats. They are found upon cattle, attacking all parts indiscriminately, and causing much irritation and annoyance to them. They have been found in the number of several hundreds on a single cow, and have also been known to attack even human subjects, but this is not common, and although it is probable that they infest other animals, the author has seen them only on cows. They do not appear to breed on the animals infested, but are produced in the forest into which the cattle are sent to graze, and which appear to become infested with them by their crawling up their legs while feeding. After having attached themselves by means of a very curious apparatus with which they are furnished, they gorge themselves with blood, and the abdomen increases in size from about the $\frac{1}{10}$ th of an inch until they become as large as a small bean; when fully gorged they fall off, and the author was not able to ascertain their further progress. The form of this insect is oval: it has eight legs, in which particular it differs from the Brazilian species described by Mr. Busk in a former paper read to the Society, these last having but six. These legs are attached to the anterior half of the trunk, and consist of seven joints, the tarsi being terminated by a species of webbed foot, capable of being folded together and furnished with two recurved claws. The oral apparatus by which it attaches itself is exceedingly interesting; it consists of two palpi serving as a kind of sheath to the other parts when inactive, two jointed mandibles, and a barbed or hooked labium. Specimens of this and other species were afterwards exhibited.

Also a paper by H. Deane, Esq., "On the Existence of Fossil *Xanthidia* in the Chalk," was read.

After mentioning that the occurrence of *Xanthidia* in a fossil state had not hitherto been observed in any other situation than in the flint-nodules of the chalk, and consequently that great doubt existed whether these fossils were really independent animal existences or only parts of some other creature, Mr. Deane stated that there is a grayish kind of chalk having no flints, but containing quantities of

nodules of iron pyrites, which juts into the sea between Dover and Folkstone, forming the beach for some distance. Upon exposing a portion of this to the action of hydrochloric acid, and examining microscopically the insoluble sediment, bodies similar to, if not identical with, the *Xanthidia* in flints were exposed to view; several species were clearly to be recognised, together with casts of *Polythalamia* and other bodies frequently found in flints.

ENTOMOLOGICAL SOCIETY.

July 3rd, 1843.—George Newport, Esq., President, in the Chair.

Mr. Samuel Stevens brought for exhibition a box of insects from Dorking, in which were specimens of *Claviger foveolatus* taken from the nest of *Formica flava*; also *Molorchus minor*, *Micronyx Jungermannia*, *Tychius lineatulus*, &c.; also a box from Charlton and Plumstead, in which were *Acalles Ptinoides*, *A. roboris*, *Pæcilus lepidus*, &c.; also the following moths from the Hammersmith marshes: *Leucania straminea*, reared from the larvæ exhibited at the last meeting, *Leucania obsoleta*, *Sensia sericea*, *Nudaria senex*, *Chilo phragmitellus* and *gigantellus*, the latter being most probably the female of the preceding insect.

Mr. Walton exhibited specimens of *Erirhinus Chamomillæ*, and Mr. Rich, a female *Goliathus*, apparently identical with *G. regius*, Klug.

A paper was read by Mr. Westwood on the Indian genera *Trigonophorus* and *Rhomborhina*, published in vol. iv. part 1. of the Transactions.

August 7th.—George Newport, Esq., President, in the Chair.

Mr. Westwood exhibited a male specimen of *Tengyra Sanvitali*, taken during the last month by sweeping in hedge-rows near Ascot heath.

Mr. Saunders exhibited a specimen of the Australian genus *Cilibe*, which had been captured alive in a garden near London. Also some pupæ of a small *Homopterous* insect which had proved very injurious in the oak plantations throughout extensive districts in Scotland, by raising blisters upon the leaves. Also specimens of a small *Dipterous* insect (*Phytomyza lateralis*), which attacks the petals of the pansy by puncturing them, as was stated, with the ovipositor, and then sucking out the colouring matter with the haustellum.

Mr. Marshall exhibited a remarkable specimen of *Hipparchia Galathea* of a white colour with the ordinary markings obliterated, and Mr. Evans a specimen of *Lamia Textor*, taken near Canterbury in July.

The following memoirs were read:—

On the Insects residing in Bramble-sticks. By Mr. F. Smith. (Published in the first part of the fourth volume of the Transactions of the Society.)

Description of a new species of *Ceria*. By Mr. W. W. Saunders. (Published in the first part of the fourth volume of the Transactions of the Society.)

On some new exotic species of *Aphodiidæ*. By Mr. Westwood. *Ann. & Mag. N. Hist.* Vol. xvi. F

September 4th.—Edward Doubleday, Esq., V.P., in the Chair.

Dr. Becker of Wiesbaden exhibited a new species of *Papilio* from South America, and also a specimen of the very rare *P. Protodamas*.

Mr. S. Stevens exhibited specimens of *Sibinia arenaria*, *Mononychus Pseudacori*, *Cicindela germanica*, *Micronyx pygmaea*, &c., recently captured in the Isle of Wight; also of *Apion Schönherri*, *Choragus Sheppardi*, *Mecinus circulatus*, and various *Lepidoptera*, the latter captured by daubing sugar upon the trunks of trees in the neighbourhood of Arundel.

Mr. F. Smith exhibited specimens of *Platypeza subfasciata*? (a *Dipterous* insect varying greatly in the two sexes,) reared from fungi from Birch wood; also *Pissodes Pini* from Weybridge.

Mr. Evans exhibited specimens illustrating the natural history of *Mamestra Brassicæ* and *Euthalia impluviata*; also a specimen of *Margaritia diversalis*, taken by himself either in Yorkshire or at Darenth wood in June last.

The following papers were read:—

Notice of a Gynandromorphous specimen of *Smerinthus Populi*. By George A. Thrupp, Esq.

Description of an ancient Irish Amulet made in the form of and used as a charm against the Murrian Caterpillar. Communicated by W. F. Evans, Esq.

Descriptions of some new species of Exotic Spiders, and two species of *Pæciloptera*. By A. White, Esq., by whom some additional observations were made on the study of arachnology, and upon the structure of the nests of two British species of spiders. He likewise read an extract from Abbott's MSS. in the British Museum, on the habits of one of the fossorial *Hymenoptera* which collects spiders for the provisioning of its nest.

MISCELLANEOUS.

Observations on the group Schizopetalææ of the family of Cruciferaæ.

By J. MARIUS BARNEUD*.

IN 1822 Mr. Francis Place, on his return from a voyage to Chili, introduced into England a charming plant having four elegantly pinnate petals, and furnished with an embryo with four yellowish cotyledons rolled in a spiral. These extraordinary characters did not prevent Sir William Hooker from placing this plant in the family of the *Cruciferaæ*; he formed of it the genus *Schizopetalon*, of which he published an excellent description and a very detailed figure in the 'Exotic Flora,' vol. i. p. 74, by the name of *Schizopetalon Walcheri*. A new coloured figure, but without analysis, appeared somewhat later in the 'Botanical Magazine,' tab. 2379.

Mr. Robert Brown, on his part, had adopted in the 'Botanical Register,' no. 752, precisely the determination and classification of Sir W. Hooker. Nevertheless these two botanists, struck with the remarkable forms which the embryo of this genus presented, had not neglected to state, that it ought to serve as type of a new tribe of *Cruciferaæ*; they differed solely on one point: Mr. R. Brown con-

* From the *Annales des Sciences Naturelles* for March 1845.

sidered the embryo as consisting of four entirely distinct cotyledons ; Sir W. Hooker, on the contrary, stated that there were only two semicylindrical cotyledons, each one divided into two very deep lobes. But this interesting question, from the simply descriptive nature of this note, will be examined subsequently in a more general manner ; at all events, up to the present day the *Schizopetalon Walcheri* continued the sole representative of a very curious group of plants well deserving the attention of botanists.

Aug. Pyrame DeCandolle, after having established in his beautiful memoir on the *Cruciferae* the bases of an embryonal classification, subsequently applied them in his 'Prodromus,' and adopted them more or less successfully to the new species ; but he had the prudent reserve to place the *Schizopetalon Walcheri* at the extremity of the series and among the genera *Incertae sedis*. Moreover the species, then somewhat rare, was not well known to him, and he did well to follow in this case the wise principles laid down by Jussieu. The rich collections of plants brought from Chili by our indefatigable traveller Claude Gay have furnished us with numerous materials on the subject ; and since the true position of *Schizopetalon* can no longer be called in question, we shall be able to show, that although science owes its most beautiful and most profound investigations on the *Cruciferae* to the genius of DeCandolle, there may nevertheless be objected to his embryonal classification, its frequently artificial side, owing to the starting from one single organ. Nature appears to have created the group of the *Schizopetaleae* to prove how little stable are frequently the majority of those sections or subdivisions of family which are not founded upon a totality of characters of affinity, as the true natural method requires.

In the herbarium from Chili we find six species of *Schizopetalon* ; of which five are new. If we study these plants with care before dissecting the seed, we are led to arrange them all in the same genus ; all have a perfect similitude in the various organs of the flower, the same aspect, and nearly the same habit ; in a word, we find an almost uniform plan of generic structure. The anatomy of the seed then demonstrates a considerable difference between several of the species. We find, on the one hand, very minute globular seeds presenting an embryo with four linear and spiral cotyledons, with curved radicle, evidently belonging to the *Spirolobeae* of DeCandolle ; and on the other, oval seeds larger than the preceding, their embryo with two incumbent spatulate cotyledons, and with an almost straight dorsal radicle, evidently belonging to the section *Notorhizeae*. This is the most striking character of the new genus *Perreymondia* *.

Now it is quite plain that it is impossible to separate, without violating the laws of natural affinity, in a methodical distribution of the Cruciferous plants, these two genera (*Schizopetalon* and *Perreymondia*), so nearly related, and solely distinct as respects the embryo, as it would be necessary to do according to the classification of DeCandolle.

The anatomical structure of the seed of the *Schizopetaleae* is com-

* In honour of Perreymond, a distinguished botanist of Provence.

posed—1. of an extremely thin, transparent, cellular external envelope, coated with papillæ; 2. of a brown, somewhat thick, central coating; and 3. of an internal membrane surrounding the embryo, and performing the functions of a kind of perisperm. Iodide of potassium shows the presence of numerous grains of starch in it.

The following is a brief monographic sketch of this tribe of the *Cruciferae* hitherto so little known:—

SCHIZOPETALEÆ, R. Br., Botan. Reg. No. 752.

Petala pinnatifida, longe unguiculata æstivatione involuta. Stamina 6 tetradynama subæqualia. Glandulæ 4 hypogynæ. Siliqua longa, polysperma. Semina globosa vel ovata subalbuminosa. Embryonis cotyledones 4 spirales, vel 2 crasso-spathulatæ. *Folia eleganter pinnatifida vel dentata. Pili omnes ramosi. Flores albi.*—Herbæ andicolæ vel maritimæ in regno Chilensi.

SCHIZOPETALON, Hooker, Exot. Flor. i. p. 74.

Calyx 4-phyllus, apice clausus, erectus. *Petala* 4 pinnatifida longe unguiculata. *Stamina* 6 subæqualia. *Siliqua* pilosa. *Stigma* basi hastatum subsessile. *Semina* globosa, minima, papilloso-rugulosa. *Embryonis* cotyledones 4, lineares, æquales, spiraliter convolutæ. *Radicula* curvata.

1. *Schizopetalon Walcheri*, Hook. in Bot. Mag. tab. 2379.
2. *Schizopetalon maritimum* (nobis). Caule subsimplici, foliis angustis pinnatifidis pilosis, spica laxissima, siliqua nervosa glabriuscula, embryone albo. ☉

PERREYMONDIA, nov. gen.

Calycis foliola 4, æqualia, erecta, obtusa, clausa. *Corolla* petala 4, hypogyna, longe unguiculata, lamina ovata, eleganter pinnatifida, laciniis linearibus obtusis æstivatione involutis. *Stamina* 6, hypogyna, tetradynama. *Filamenta* libera, edentula. *Antheræ* sagittato-lineares. *Glandulæ* hypogynæ 4, lineares, erectæ, obtusæ, petalis suboppositæ. *Ovarium* 2-loculare, pubescens. *Stylus* brevis vel nullus. *Stigma* hastatum, apice subacuminatum. *Siliqua* bivalvis, dehiscens, et sæpe ad maturitatem pendula, polysperma, anguste linearis, et pilis ramosis vestita. *Septum* membranaceum stomatibus destitutum. *Semina* ovata, fulva, subrugulosa, subalbuminosa. *Embryonis* albi cotyledones 2, incumbentes, spathulatæ, apice crassæ. *Radicula* dorsalis recta.—*In regno Chilensi. Flores albi.*

1. *Perreymondia dentata* (nobis). Pubescens; caule macilento, foliis oblongis inæqualiter dentatis; spica pauciflora, laxissima; florum pedicellis pilosis. ☉
2. *Perreymondia rupestris* (nobis). Canescens; caule folioso, ramoso, foliis cano-pinnatifidis, carnosulis; spica laxa; floribus pilosis; siliqua vermiculata, tomentosa. ☉
3. *Perreymondia multifida* (nobis). Caule ramoso hispidulo, foliis angustis inciso-subbipinnatifidis albicantibus; floribus pilosis; siliqua gracili; stigmatibus subsessili. ☉
4. *Perreymondia Brongniartii* (nobis). Caule erecto, ramosissimo, patulo, foliis dentato-pinnatifidis, canescentibus, crassiusculis; spica longa multiflora; siliqua vermiculata; stigmatibus sessili. ☉

On the Microscopic Constituents of the Ash of Fossil Coal.

By Professor EHRENBERG.

At the meeting of the Berlin Academy of the 25th of October, Prof. Ehrenberg communicated an observation of Dr. Franz Schulz of Eldena, which the latter had addressed to M. v. Humboldt in a letter, in which he describes his method of separating the silica contained in coal so chemically pure as to enable us to recognise the microscopical siliceous organisms. "The usual method of burning the coal," Dr. Schulz states, "is attended with an unavoidable vitrification of the mineral constituents, even when conducted in the slowest and most cautious manner, owing to which their cellular structure is lost. After many fruitless experiments I succeeded in hitting upon a method of incineration, which leaves the silica contained in the coal perfectly unaltered. Very instructive preparations are readily obtained (from the already known structural relations of siliceous earth in plants) on moistening grass-halms, ears of grain, *Equisetum*, Spanish cane, &c., with nitric acid, and afterwards burning them on platinum foil. The nitric acid not only facilitates the combustion of the organic substance, but also prevents the potash combined with the vegetable acid from being converted into carbonate of potash before the silica has been heated to such a degree as to be less liable to be acted upon. The greater degree of heat required for the perfect combustion of the coal no longer destroys the cellular form of the silica after nitric acid has prevented the production of carbonate of potash on the first application of heat. An excess of nitric acid has the effect of destroying the connexion of the siliceous cells and acts too powerfully upon them, and should therefore be avoided.

"Encouraged by the success of these experiments, I turned my attention to coal, it being exceedingly desirable to be enabled to detect remains of organic structure in it. The large quantity of siliceous earth contained in all varieties of coal led me to infer that a judicious method of incineration would be attended with good results; your excellency will be enabled to judge from the preparation attached in how far I have succeeded. A piece of coal of about two square inches was broken into twelve pieces of nearly the same size, and then treated with nitric acid in a platinum vessel. The nitric acid being evaporated at a moderate heat, I ignited the residue until no further empyreumatic vapours were given off, treated the residue again with nitric acid and repeated the ignition. Thus prepared, the coal was placed in a platinum crucible with a lid perforated in the centre, and air was blown from a gasometer through the aperture in the lid, whilst the crucible was kept at a red heat over a spirit-lamp, so that the coal was necessarily slowly consumed. The ash thus obtained had not coked, but formed a brownish powder. Some white splinters occur among this, which appear on microscopical examination to be aggregated siliceous cells arranged in regular succession, of the structure of the prosenchymatous cells of wood."

Prof. Ehrenberg added, that the importance of a method for obtaining the organized siliceous parts from the lower strata of the earth with their forms preserved for microscopical observation is ma-

nifest, and requires no recommendation, to judge from the results which have already ensued. His own efforts with respect to coal had never been attended with success, and he therefore considers this method as a most useful and important discovery. He further stated that the clearness of the specimens (which were, it was to be regretted, not numerous) communicated by M. Schulz had astonished him, and, as might have been expected, had immediately been attended with a result. Prof. Ehrenberg had during many years brought before the Academy descriptions of the parts of plants (containing silica) which are found in marshy soils of all zones and in the infusorial deposits, and had likewise alluded to their origin from recent plants. This group, called *Phytolitharia*, had been as it were classified by him into eleven genera. Of these eleven genera only one is found in several forms in the purified siliceous ash of the coal forwarded by M. Schulz, namely the genus *Lithostylidium*, which contains regular siliceous nuclei of cells of plants. *Lithodontia*, or marginal teeth of grasses, *Lithodermatia*, or epidermis of plants (*Equisetacea*, *Arundinacea*), could not be distinctly recognised, although the presence of the latter may be presumed. Other negative results were also particularly remarkable, namely the absence of all *Lithasterisci*, *Lithosphææ*, *Spongolites*, &c. &c., otherwise so frequent. Finally, no trace of infusoria possessing a siliceous shell was found, notwithstanding the most careful investigation.

He concluded by expressing a conviction that a rapid development of our knowledge on this subject would, now that a method had been discovered, undoubtedly take place, and a wish that this may be the commencement of its study.

On the Tendrils of the Cucurbitaceæ. By M. J. PAYER.

In organographical researches it is sometimes necessary to examine comparatively the same organ, not merely in plants of the same family, but likewise in the same plant at various periods of its existence, and, if necessary, to have recourse to anatomy. It is from having neglected these two modes of investigation that all botanists who have studied the nature of the tendrils of the *Cucurbitaceæ* have either been completely mistaken, or have perceived the truth but in a very indistinct manner, and without being able to demonstrate it.

There are many plants in which fibro-vascular bundles are detached at three different points of the circumference of the cylinder constituting the medullary sheath, generally at one and the same height and at a little distance from the origin of a leaf: these bundles traverse the herbaceous envelope and pass into the pulvinus (*coussinet*) of that leaf. There, sometimes all three enter the petiole, sometimes only one of them,—the central one, the two lateral ones continuing the nervation of the two lateral stipules. Now, if the lower leaves of the cultivated melon be examined, no tendril will be found to exist at their side*; it will be seen that the three fibro-

* This fact may be generalized, for it results from a large number of observations which I have made, that plants with tendrils, of whatever kind, never present tendrils at their lower extremity.

vascular bundles which separate from the medullary sheath ascend all three into the petiole, and that the bud formed at their axil, and *always placed between the intermediary bundle and the stem*, is decidedly at the middle of the base of the leaf. If, on the contrary, the stem-leaves which have a lateral tendril are considered, we observe that of the three fibro-vascular bundles, only two, the central and one of the lateral ones, enter the petiole, and that the other penetrates into the tendril. In this case, the bud, from its constant position between the intermediary bundle and the stem, is no longer, like this intermediary bundle, at the centre of the base of the petiole, but on the side, and appears to be almost between the leaf and the tendril. Lastly, we frequently meet in botanical gardens with the upper leaves each accompanied by two lateral tendrils. The anatomy then indicates that a single bundle, the central one, traverses the petiole, and that the two lateral ones pass each one into a tendril. With respect to the bud, it necessarily is situated between the middle of the base of the petiole and the stem.—*Ann. des Sci. Nat.*, March.

METEOROLOGICAL OBSERVATIONS FOR MAY 1845.

Chiswick.—May 1, 2. Very fine. 3. Fine, with clouds. 4. Cloudy and cool. 5. Fine: dense clouds: clear. 6. Cloudy: rain. 7. Cloudy: showers. 8. Rain. 9. Cloudy: clear. 10. Foggy: cloudy: clear at night. 11. Cloudy. 12. Rain: showery. 13. Cloudy and fine. 14. Fine. 15. Overcast: fine. 16. Cloudy. 17. Overcast: slight frost at night. 18. Cloudy: showery. 19. Cloudy and cold. 20. Cloudy: rain. 21. Heavy rain. 22. Cloudy: very clear. 23. Overcast: fine: heavy rain. 24. Hazy clouds: heavy rain at night. 25. Rain. 26. Overcast: heavy rain. 27. Very fine. 28. Hazy and damp. 29. Thick haze: rain. 30. Fine. 31. Very fine: cloudless: overcast at night.—Mean temperature of the month 5°·3 below the average.

Boston.—May 1. Fine. 2. Fine: thunder and lightning p.m., with rain. 3. Cloudy: thunder and lightning p.m., with rain. 4. Fine: rain early a.m. 5. Fine: rain early a.m.: rain p.m. 6. Rain. 7. Cloudy: rain early a.m.: rain p.m. 8. Fine: rain a.m. 9. Cloudy: rain early a.m. 10. Rain. 11. Cloudy. 12. Fine: rain a.m. and p.m. 13. Fine: rain p.m. 14, 15. Fine. 16. Cloudy. 17. Cloudy: rain a.m. 18. Windy. 19. Fine: rain early a.m. 20. Fine: rain p.m. 21. Cloudy. 22. Fine. 23. Cloudy: rain p.m. 24, 25. Cloudy: rain early a.m. 26. Cloudy: rain early a.m.: rain p.m. 27. Fine. 28. Fine: rain early a.m.: rain p.m. 29. Cloudy: rain p.m. 30, 31. Fine.

Sandwick Manse, Orkney.—May 1. Drops: showers. 2. Showers. 3. Showers: sleet. 4. Bright: showers. 5—7. Clear. 8. Rain: showers. 9, 10. Showers. 11. Bright: cloudy. 12, 13. Clear. 14. Drops: clear. 15. Fog: drizzle. 16. Showers: drizzle. 17. Bright: clear. 18. Cloudy: clear. 19. Clear. 20. Cloudy. 21. Bright: cloudy. 22, 23. Cloudy: damp. 24, 25. Cloudy. 26. Bright: cloudy. 27. Cloudy. 28, 29. Bright: clear. 30. Cloudy: fine. 31. Bright: fine.

Applegarth Manse, Dumfries-shire.—May 1. Heavy showers. 2, 3. Heavy showers, with hail. 4. Sunshine and showers. 5. Fine. 6. Moist: light drops. 7—9. Slight showers. 10. Fine. 11. Rain p.m.: hoar-frost a.m. 12. Showers. 13. Fair and fine. 14. Rain nearly all day. 15—17. Fair: fine: bracing air. 18. Fair, but threatening. 19. Fair, but threatening: fine. 20, 21. Fair, but threatening: droughty. 22—24. Fair, but threatening. 25. Fair, but threatening: few drops of rain. 26. Fair, but threatening: very droughty. 27—30. Fair, but threatening. 31. Fine: warm.

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VII.—*Notes of a Microscopical Examination of the Chalk and Flint of the South-east of England; with remarks on the Animalcules of certain Tertiary and Modern Deposits.* By GIDEON ALGERNON MANTELL, Esq., LL.D., F.R.S.*

THE founders of this Society could scarcely have imagined that the structure and economy of those minute forms of animal existence which are invisible to the unassisted eye, would become a legitimate subject of geological investigation; and that the durable coverings or cases of these miniatures of life would be found preserved in a fossil state, and in such inconceivable numbers, as to constitute not only a large proportion of many rocks, but the entire mass of certain deposits of great thickness and extent: still less could they have surmised that the soft perishable bodies of animalcules of this kind would be preserved by mineralization, and be found entombed, like flies in amber, in the flint nodules of which our roads are so largely constructed.

When the attention of geologists was first directed, a few years since, to this most interesting department of palæontology, by the surprising discoveries and startling deductions of that eminent philosopher, M. Ehrenberg, several observers in this country entered upon the investigation with much alacrity, to satisfy themselves of the correctness of the marvellous statements of the Prussian naturalist; but this inexhaustible and most inviting field of inquiry has not been followed up with the zeal and assiduity which might have been anticipated, from the facility of the examination, and the important results which could not fail to be obtained by any competent and patient observer.

With the exception of the able "Memoir on the Siliceous Bodies of the Chalk, Greensands and Oolites," by Mr. Bowerbank, and which is published in the sixth vol. of the Geological Transactions,—a memoir to which I shall hereafter have occasion to refer,—no express communication on this subject has, I believe,

* Read before the Geological Society of London, May 14th, 1845.
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